



PATENT  
Docket No. 10164-1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

**Arthur W. Chester et al.**

Serial No. 09/351,147

Filed: July 12, 1999

For: CATALYTIC PRODUCTION OF LIGHT  
OLEFINS FROM NAPHTHA FEED

Examiner: Walter D. Griffin

Group Art Unit: 1764

SUPPLEMENTAL INFORMATION DISCLOSURE  
STATEMENT UNDER 37 C.F.R. 1.97(d)

Fairfax, Virginia 22030

Commissioner for Patents  
Washington, D.C. 20231

Sir:

1. This information disclosure statement is filed before payment of the issue fee in the above-referenced application.

2. The undersigned states in accordance with 37 CFR 1.97(e) that each item of information cited in the attached PTO-1449 lists references which were cited or otherwise noted in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.

3. A petition requesting consideration of the information disclosure statement is attached herewith.

4. A check in the amount of \$130.00 for the petition fee set forth in 37 CFR 1.17(i) is attached herewith.

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5. A copy of the PCT international search report in which the references were cited is enclosed.

6. The cited references are described below:

U.S. Patent No. 5,898,089 to Drake et al. (Phillips Petroleum Company) discloses using a catalyst comprising acid-treated zeolite, such as ZSM-5, to process fluid C<sub>4</sub>-C<sub>30</sub> hydrocarbon feed, such as gasolines from cracking processes and naphthas (col. 9, lines 39-46) to convert hydrocarbons to C<sub>6</sub>-C<sub>8</sub> aromatic hydrocarbons and olefins. The catalyst is promoted with a wide variety of compounds including phosphorus-containing compounds which can be converted to phosphorus oxide for "reducing coke deposition." The reference is silent concerning use of "substantially inert matrix material" as required by the present application" and uses active catalyst binders such as alumina and clay. Moreover, the reference teaches phosphorus-treatment of unbound ZSM-5 zeolite and ZSM-5 with alumina binder for the purpose of reducing coke make (column 13, lines 30-51). Given this teaching, one skilled in the art would lack incentive to treat the catalyst with phosphorus except in the presence of coke-inducing active binders.

EP 0323736 A2 to Nemet-Mavrodin discloses co-production of aromatics and olefins, e.g., C<sub>2</sub>-C<sub>4</sub> olefins from paraffinic feedstocks such as light FCC gasoline or C<sub>5</sub>-C<sub>7</sub> fractions of straight run naphthas, over a ZSM-5 catalyst which may comprise matrix or binder materials "which include active and inactive materials" (page 4, line 11-14). The catalyst may have an alpha value of 5 to 25 and may comprise zeolite blended with "sufficient amounts of binder material" (page 5, lines 13-15). The reference is silent concerning phosphorus treatment of the catalyst except for teaching at page 3, lines 46-49 the use of zeolites which

can be free of oxides incorporated into the zeolites by an impregnation treatment. Thus, these zeolites can be free of oxides incorporated into the zeolites by an impregnation treatment. Examples of such impregnated oxides include oxides of phosphorus as well as those oxides of the metals of

Groups IA, IIA, IIIA, IVA, VA, VIA, VIIA, VIIIA, IB, IIB, IIIB, IVB, or VB of the Periodic Chart . . . .

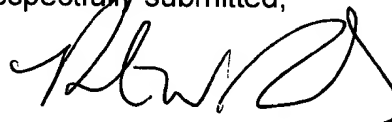
U.S. Patent No. 5,348,643 to Absil et al. discloses a cracking process for converting heavy feeds having an initial boiling point above 204°C over a catalyst prepared from a clay comprising clay, a source of phosphorus, and an acid stable zeolite such as ZSM-5.

The art listed herein, while of some relevance, is not to be considered to teach or suggest the invention described and claimed in the aforementioned application. The references do not teach or suggest converting C<sub>4</sub>+ naphtha to light olefins and aromatics, by contacting with a catalyst comprising zeolite ZSM-5 and/or ZSM-11 treated with phosphorus-containing compound and a substantially inert matrix material.

It is respectfully requested that the references listed herein be considered during prosecution of this application and made of record therein, appearing among the "References Cited" on any patent to issue therefrom.

Date: December 8, 2000

Respectfully submitted,



Peter W. Roberts  
Attorney for Applicant(s)  
Registration No. 29,651  
(703) 934-7008

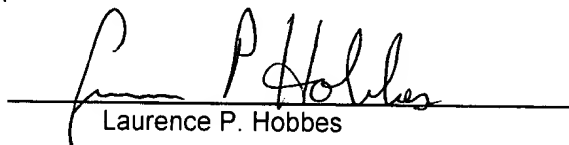
POST OFFICE ADDRESS to which  
correspondence is to be sent:  
Roberts, Mlotkowski & Hobbes  
3911 Old Lee Highway  
Suite 43 B  
Fairfax, VA 22030

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on December 8, 2000.



Laurence P. Hobbes